Attorney Docket No. 10559-105001
Serial No.: 09/458,370
Amendment dated January 21, 2004
Reply to Office Action dated October 22, 2003

Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Currently amended) A method of implementing a two-dimensional inverse discrete cosine transform, comprising:

executing ~~two~~ first and second one-dimensional inverse discrete cosine transforming functions in first and second separate inverse discrete cosine transforming calculators, each of the first and second functions being controlled to operate on a matrix of coefficients ~~in concurrently two same directions and to periodically change said directions~~ with both of said first and second inverse discrete cosine transforming calculators operating simultaneously in a row direction at a first time, and with both of said first and second inverse discrete cosine transforming calculator operating simultaneously in a column direction at a second time.

2-3. (Cancelled)

4. (Previously presented) The method of claim 1 further comprising a sequencer which determines which direction each function operates in for a given matrix.

5. (Currently amended) The method of claim 1 further comprising an address generator which generates an address for each coefficient in the matrix.

6. (Currently amended) The method of claim 1 wherein ~~said executing, executes~~ the functions concurrently executed in the same direction on two different matrices of coefficients.

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7. (Original) The method of claim 1 in which the functions are concurrently executed in the same direction, the functions switching periodically and concurrently to the other direction.

8. (Currently Amended) A storage medium bearing a machine-readable program capable of causing a machine to:

execute two, one-dimensional inverse discrete cosine transforming functions in first and second inverse discrete cosine calculators, each of the functions being controlled to operate on a matrix of coefficients ~~in either of two different directions but carrying out both of said functions in the same direction concurrently, and periodically changing said direction~~ with both of said first and second inverse discrete cosine calculators operating simultaneously in the row direction at a

first time, and with both of said first and second inverse discrete cosine calculators operating simultaneously in the column direction at a second time subsequent to said first time.

9-10. (Cancelled)

11. (Original) The medium of claim 8 in which a sequencer determines which direction each function operates in for a given matrix.

12. (Original) The medium of claim 8 in which an address generator generates an address for each coefficient in the matrix.

13. Original) The medium of claim 8 in which the functions are concurrently executed in the same direction on two different matrices of coefficients.

14. (Original) The medium of claim 8 in which the functions are concurrently executed in the same direction, the functions switching periodically and concurrently to the other direction.

15. (Currently Amended) A method of implementing a two-dimensional inverse discrete cosine transform, comprising:

first executing a first one-dimensional inverse discrete cosine transforming function on a first inverse discrete cosine calculator, in a ~~first~~ row direction on a first matrix of coefficients to produce a first matrix of intermediate results;

second, after said first executing, on a second inverse discrete cosine calculator, executing a second one-dimensional inverse discrete cosine transform in a column ~~second, different~~ direction on a second matrix of coefficients to produce another matrix of intermediate results;

on said first inverse discrete cosine calculator, executing a third one-dimensional inverse discrete cosine transforming function in said ~~second~~ column direction on the first matrix of intermediate results concurrent with said second executing in the ~~second~~ column direction on said second matrix of coefficients; and

periodically switching said executing between the ~~first~~ row and ~~second~~ column directions.

16-18. (Cancelled)

19. (Currently Amended) A storage medium bearing a machine-readable program capable of causing a machine to:

execute a first one-dimensional inverse discrete cosine transforming function, where the first function executes in a ~~first~~ row direction on a first matrix of coefficients, producing a matrix of intermediate results; ~~and~~

execute a ~~second~~ third one dimensional inverse discrete cosine transforming function ~~on a second~~ in a column direction on a second matrix of coefficients;

execute a ~~second~~ third one-dimensional inverse discrete cosine transforming function, where the second function executes in said ~~second~~ column direction on the matrix of intermediate results concurrent with the execute a second function on the second matrix of coefficients,

in which the functions switch periodically and concurrently between the ~~first and second~~ row and column directions.

20-22. (Cancelled)

23. (Currently amended) An apparatus implementing a two-dimensional inverse discrete cosine transform, comprising:

two one-dimensional inverse discrete cosine transform blocks;

a memory block;

a sequencer block, the sequencer block alternately being in ~~one of two states, each state indicating the~~ a first to state to control a column direction of operation of both ~~each~~ one-dimensional inverse discrete cosine transform ~~block~~, and in a second state to control a row direction of operation of both one-dimensional inverse discrete cosine transform blocks; and

an address generator block which generates addresses for the one-dimensional inverse discrete cosine transform blocks in the direction indicated by the state of the sequencer.

24. (Cancelled)

25. (Currently Amended) A computer system including a processor, comprising:

~~two~~ first and second one-dimensional inverse discrete cosine transform blocks;

a memory block;

a sequencer block, which alternates between a first state which controls both of said first and second one-dimensional inverse discrete cosine transform blocks to operate in a row direction, and a second state which controls both of said first and second one-dimensional inverse discrete cosine transform

blocks to operate in a column direction, the sequencer block alternately being in one of two states, each state indicating the direction of operation of both one-dimensional inverse discrete cosine transform block; and

an address generator block which generates addresses for the one-dimensional inverse discrete cosine transform blocks in the direction indicated by the state of the sequencer.

26-27. (Cancelled)

28. (Previously presented) A method as in claim 15, wherein said second one-dimensional inverse discrete cosine transforming function and said third one-dimensional inverse discrete cosine transforming function occur concurrently in the same direction.